Center Independent Research & Development: GSFC IRAD

Rapid Development of Guidance, Navigation, and Control Core Flight System Software Applications Using Simulink Models

Completed Technology Project (2013 - 2014)

Project Introduction

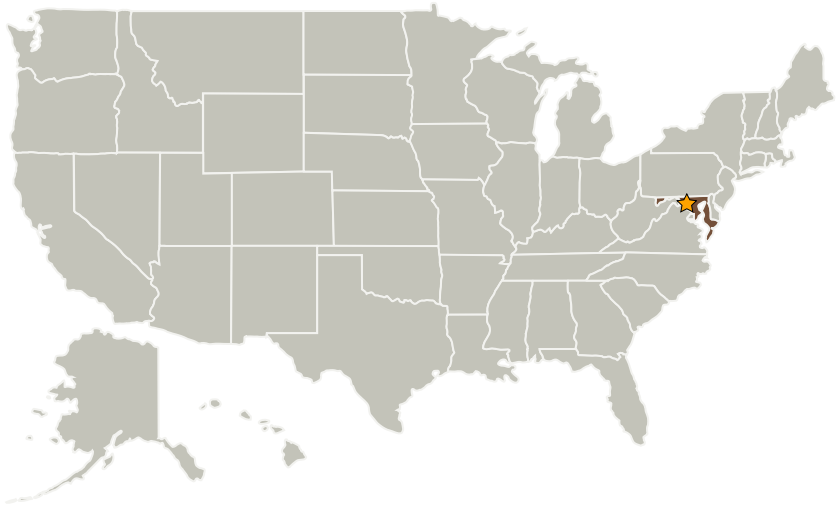
The goal of this proposal is to demonstrate a new Guidance, Navigation, and Control (GNC) Flight Software (FSW) application development paradigm which takes advantage of Simulink's auto-coding capabilities using the Simulink Integration Layer (SIL). This approach will reduce our staffing costs and software development schedule and will increase Goddard Space Flight Center's (GSFC) competitiveness for missions in emerging fields with smaller budgets.

We will demonstrate the usefulness of SIL for GSFC missions by attempting to compile the SIL source code with an autocoded sample GNC application flight software. We will then attempt to execute the compiled GNC CFS applications on test flight hardware, collect performance data, and then document our results. If possible, we will attempt to expand its functionality with regards to fault reporting, telemetry processing, and time management.

Anticipated Benefits

N/A

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
★Goddard Space Flight Center(GSFC)	Lead Organization	NASA Center	Greenbelt, Maryland

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Primary U.S. Work Locations
Maryland

Project Website:

http://aetd.gsfc.nasa.gov/

Organizational Responsibility

Responsible Mission Directorate:

Mission Support Directorate (MSD)

Lead Center / Facility:

Goddard Space Flight Center (GSFC)

Responsible Program:

Center Independent Research & Development: GSFC IRAD

Project Management

Program Manager:

Peter M Hughes

Project Manager:

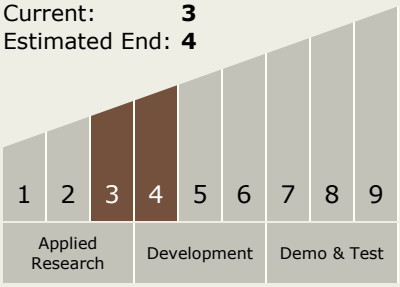
Jacqueline J Le Moigne

Principal Investigator:

Michael Y Yang

Technology Maturity (TRL)

Start: **3**
Current: **3**
Estimated End: **4**



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Technology Areas

Primary:

- TX17 Guidance, Navigation, and Control (GN&C)
  - TX17.5 GN&C Systems Engineering Technologies
    - TX17.5.1 GN&C System Architectures, Requirements and Specifications